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of this opportunity of cross-examination deprived the accused of the right to impeach the witness by independent proof of those statements, and thus, while the death of the witness did not deprive the government of the benefit of his testimony against the accused, it did deprive the latter of the right to prove that the testimony of the witness was untrustworthy. By this ruling the court below rejected evidence of a positive character, testified to by witnesses to be produced and examined before the jury, upon a mere conjecture that a deceased witness might, if alive, reiterate his former testimony. It would seem to be a wiser policy to give the accused the benefit of evidence, competent in its character, than to reject it for the sake of a supposition so doubtful.

The judgment of the court below ought to be reversed, and the cause remanded, with directions to set aside the verdict and award a new trial.

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THE ROLLER MILL PATENT.<sup>1</sup>

APPEAL FROM THE CIRCUIT COURT OF THE UNITED STATES FOR  
THE NORTHERN DISTRICT OF ILLINOIS.

No. 70. Argued November 12, 1894. — Decided February 4, 1895.

The invention protected by letters patent No. 222,895, issued December 23, 1879, to William D. Gray for improvements in roller mills, is not infringed by the machine used by the defendant in error.

Letters patent No. 238,677 issued March 8, 1881, to William D. Gray for improvements in roller mills, are void for want of novelty.

THIS was a bill in equity filed by the Consolidated Roller Mill Company against the Barnard & Leas Manufacturing Company, for the infringement of four letters patent for certain improvements in roller mills, viz., patent No. 222,895, issued December 23, 1879, to William D. Gray, patent No.

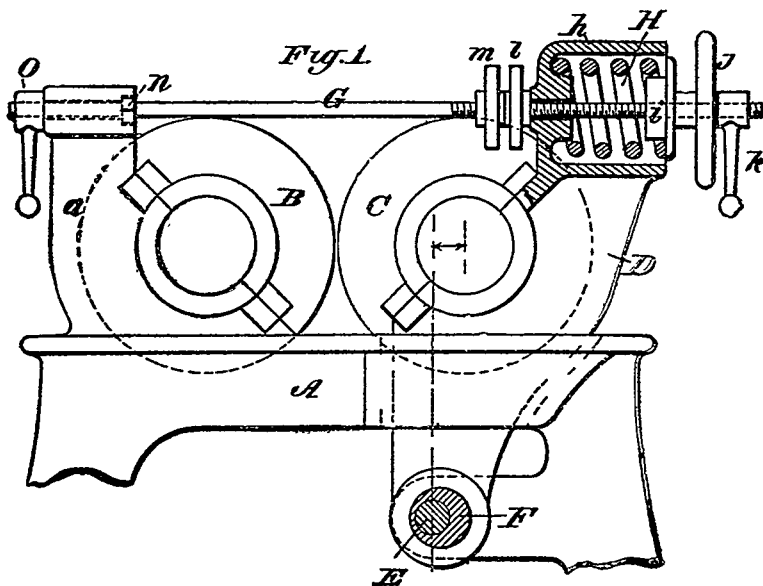
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<sup>1</sup> The docket title of this case is "*The Consolidated Roller Mill Company v. The Barnard & Leas Manufacturing Company.*" On the suggestion of the court, a shorter title is adopted for convenience of reference.

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238,677, issued March 8, 1881, to the same person, reissued patent No. 10,139, issued June 20, 1882, to U. H. Odell, patent No. 269,623, issued December 26, 1882, to Hans Birkholz. As plaintiff asked for a decree only upon the Gray patents, the others will not be further noticed.

The invention covered by patent No. 222,895 "consists in a peculiar construction and arrangement of devices for adjusting the rolls vertically as well as horizontally, whereby any unevenness in the wear of the rolls or their journals or bearings may be compensated for, and the grinding or crushing surface kept exactly in line." In his specification the patentee states that "in the use of roller mills it is found that the roller bearings wear unequally at opposite ends, and also that they wear more rapidly on the under than on the upper side, and that, consequently, the rolls lose their parallelism and their proper vertical height. It is to overcome these difficulties that the present invention is designed, and to this end the parts are constructed and arranged as represented in the accompanying drawings," the most important one of which is here given.



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The mill shown and described in the patent consisted substantially of the frame A, the roller B revolving in fixed bearings, and the companion roller C, journalled at its ends, and revolving in a swinging arm or support, D, pivoted at its lower end upon a bolt, E, thus enabling the roll to be swung toward or away from the stationary roll B, as required. In order that the arm or support D might be adjusted vertically, and the roll C thereby lifted or lowered, the bolt E was mounted upon an eccentric sleeve, F, such sleeve being furnished with a suitable head to receive a wrench by which to adjust it. "By turning the sleeve F the arm may be moved up or down, as desired, and when the adjustment has been made the sleeve is clamped firmly in place by means of the bolt E, which draws its end against the main frame, the sleeve then becoming the pivot or journal on which the arms or supports D move when being adjusted horizontally"

To provide for an adjustment of the rollers to and from each other horizontally, a rod, G, was extended from the stationary bearing *a* at each side of the machine to the upper end of the swinging arm or support D on the same side. The upper end of each arm or swinging box D is formed with an enlarged spring case or chamber, *h*, perforated on its inner side to permit the passage of the rod or stem G through it, a strong spring, H, being placed in said chamber, and retained therein by means of a washer or plate, *i*, placed upon the rod and held against the spring by a wheel-nut, *j*, which screws upon the threaded end of the rod or bolt G, and is in turn held by a jam-nut, *k*. By turning the nut-wheel *j*, the spring H is compressed, the roll C is crowded toward the roll B, and at the same time the bearing D is held firmly against the nut *j*, and the additional jam-nut *m*. The spring H is designed to permit the swinging roller to give way, in case a stone or nail or other hard substance is caught between the rolls, after the passage of which, the roll, with the aid of the spring, returns at once to its place.

To permit the ready separation of the rolls, the end of the rod G, where it passes through the fixed bearing *a*, has a shoulder, *n*, abutting against such bearing, and acting as a

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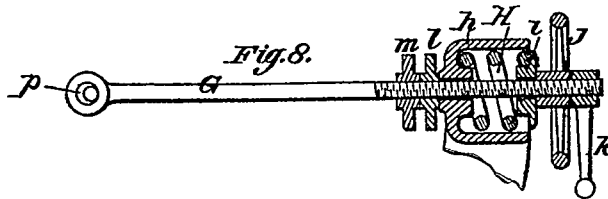
stop. On the other side of the bearing is a nut, O, threaded on the rod G. By releasing or partially turning off the nut O the roll C is allowed to fall back, and move away from the roll B, but by again turning up the nut the shoulder *n* is brought back accurately to its original position. An eccentric is shown in Fig. 8 as an equivalent of the nut O.

Plaintiff claimed an infringement of the fourth, fifth, and sixth claims of this patent, which were as follows.

"4. In combination with the movable roller bearing, the rod G, adjustable stop device to limit the inward movement of the bearing, an outside spring urging the bearing inward, and adjusting devices, substantially as shown, to regulate the tension of the spring.

"5. In combination with the roller bearing, the adjusting rod provided at one end with a stop to limit the inward movement, a spring, and means for adjusting the latter, and provided at the other end with a stop and holding device, substantially as shown and described.

"6. The combination of the bearing D, rod G, nut *l*, spring H, nut *j*, stop *n*, and nut O "



Patent No. 238,677 exhibits a roller mill substantially identical with that of the former patent except in the spreading device, which consists of an eccentric shaft carrying two eccentrics, by which the two ends of the roll are spread at one motion. Each of these shafts is provided with an arm, to which a rod is connected, so that the moving rod simultaneously moved both ends of the movable rolls.

The patentee states the operation of his device as follows "By moving the rod K, which may be done from either side of the machine, all the eccentrics are operated simultaneously

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and the movable rolls thrown instantly into or out of an operative position, and this without destroying the adjustment of the parts which control the exact position of rolls when they are in action."

Plaintiff relies only upon the infringement of the second and third claims, which are as follows

2. "In combination with the swinging roll-supports E and the rods G connected therewith, the eccentrics H, shafts I, and rod K.

3. "In combination with movable roll-supports E and the rods G adjustably connected thereto, a transverse shaft, I, provided with two eccentrics connected to the rods G at opposite ends of one roll, whereby the roll may be thrown into and out of action instantly without changing the adjusting devices."

Upon a hearing in the Circuit Court upon pleadings and proofs, the bill was dismissed, and plaintiff appealed.

*Mr George H. Lathrop* for appellant.

*Mr Robert H. Parkinson* for appellee.

MR. JUSTICE BROWN, after stating the case, delivered the opinion of the court.

From time immemorial wheat has been reduced to flour by grinding it between heavy disks of stone set upon a shaft, the upper one of which revolved, while the nether one remained stationary. The grain being introduced through an opening in the centre of the upper stone, was ground between the burred surfaces of the stones, and gradually found its way outward, until it was discharged from the periphery or skirt of the stones in the form of flour. This ancient method has within the past twenty years given place to a system of crushing between rollers, which appears to have originated in Buda-Pesth in the kingdom of Hungary, and to have been the subject of several foreign patents. These roller mills, which, soon after their invention, were introduced into this country, and have practically superseded in all large flouring

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mills the older method of grinding, consist generally of two or more pairs of rollers, mounted in a strong frame, and lying, as a rule, in the same horizontal plane. One of these rolls is fixed, and journalled in a stationary bearing. The other is mounted upon an adjustable bearing, which permits it to yield or give way in case any hard substance enters between the rollers. It is also capable of a slight vertical adjustment, to maintain the exact parallelism of the rolls. While these rolls are not in actual contact when grinding, they are very nearly so, and their adjustment is a matter of extreme nicety. That the grains of wheat may be ground to a fine powder, as well as crushed, the rolls must be slightly corrugated like the ancient burr stones, and must run at different speeds. Their action thus has the tearing effect necessary to reduce the grain to flour. The rolls must be so close together as to reduce the wheat to a fine flour, and at the same time they must not touch, or their surfaces would be ruined.

In order to secure the successful operation of these machines, provision must be made for 1. A vertical adjustment, to bring the axes of the two rolls into the same horizontal plane, so that, in case of irregular wearing of their surfaces or bearings, the axes may be brought exactly in line. This is called the adjustment for "tram." If the adjustment were defective in this particular, the rolls would grind finer at the centre than at either end, or finer at one end than at the other. 2. A horizontal grinding adjustment, by which the distance between the two rolls is kept precisely the same their entire length, while the rolls are in operation, so that they may not grind unequally at any point. 3. A spring device, by which the rolls are made to yield to a breaking strain, whenever a nail or other hard substance enters between them. 4. A stop and holding device, by which the rolls are spread apart when not in operation, and are thrown together again precisely as before, without a new adjustment. The object of the patent in suit was to provide the means for such vertical and horizontal adjustments, the requisites of such adjustments, except the third, being that they must be fixed and permanent. The object of the third was merely to prevent injury to the rolls

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by the entrance of a hard substance, after the passage of which they returned immediately to their former position.

The patent contains seven claims, the second and third of which refer to the device for adjusting the rolls vertically as well as horizontally, while the fourth and fifth, which are the most material in the consideration of this case, refer to the special devices connected with the rod G for supporting the rolls.

To understand accurately the scope of the Gray invention, it is necessary to consider some of the principal foreign patents, as well as the history of the Gray patent in the Patent Office, and the limitations which were imposed by it, and accepted by him before the patent was granted. In his original application, made in July, 1879, Gray stated his invention to consist "in devices for adjusting the rolls vertically, as well as horizontally, whereby any unevenness in the wear of the rolls, or their journals or bearings, may be compensated for, and the grinding or crushing surfaces kept exactly in line," and also "in the devices for separating the rolls when not in action," and in other details. His claims corresponded with his evident belief that he was the inventor broadly of devices for a roller adjustment, both vertical and horizontal, and were as follows

"1. In combination with the stationary roll B, the adjustable roll C, mounted in rocking supports, the pivots of which are located in advance of the journals of the roll, substantially as described.

"2. In combination with a stationary roll, an adjustable roll mounted substantially in the manner described, whereby it may be adjusted, both vertically and horizontally

"3. In a roller-grinding mill, a roll mounted at its ends in arms or supports arranged to be independently adjusted, both vertically and horizontally, substantially in the manner described.


"4. In a combination with the roll C, the independent arms or supports D, mounted upon eccentrics, substantially as shown, whereby either end of the roll may be adjusted vertically

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"5. In combination with the stationary roll B and adjustable roll C, means, substantially such as described, for drawing the roll C to a fixed point."

His application in this form was refused by the Commissioner of Patents in a letter of August 14, 1879, notifying Gray that his invention was not generic, in view of the English patent No. 3328, of 1877, and suggesting that the specification needed revision, making it a clear description of a specific means employed by applicant. In reply to this letter, Gray immediately amended his application by two insertions in the preamble, so that instead of reading "my invention consists in devices for adjusting the rolls vertically as well as horizontally," it reads "consists in a *peculiar construction and arrangement* of devices for adjusting the rolls vertically as well as horizontally," and by inserting the word "special" before the words "devices for separating the rolls when not in action." He also withdrew all his claims and substituted others, limiting his invention to the particular combinations described in his specification.

The English patent to Lake, to which the Patent Office made reference in its letter of August 19, was one of a series of patents issued in different countries to cover certain inventions of one Nemelka, of Simmering, Austria, upon which he obtained two patents in Austria, January 15 and May 22, 1875, a patent in France, June 23, 1875, a patent in England, issued to Lake, February 28, 1878, and a patent in the United States, November 12, 1878. While these patents have a general resemblance to each other, the different forms which Nemelka's inventions took are best shown in the patent to Lake, which may also be taken as representing most truly the state of the art at the time the Gray patent was issued. It would serve no useful purpose to analyze and compare the different shapes which the Nemelka machines took in the Lake patent. The drawings are confused, badly lettered, and difficult to understand. No less than four different forms of the mechanism are shown, varying as among themselves, but all containing provisions for vertical and horizontal adjustments. The machine shown in figures 11, 12, 13, and 15



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exhibits a roll vertically adjustable by a set screw underneath it, and adjustable horizontally for parallelism by a sliding bracket, which also supports the bearing of a shaft working in an eccentric journal, and operated by a lever pivoted upon the shaft, by the movement of which the rolls are opened when not in operation. Other forms of the patent apparently show, though somewhat imperfectly, a capability of yielding to spring pressure by means of an india-rubber buffer located at the lower end of a long descending arm of the movable bearing. An exhibit known as *Die Mühle* also shows very plainly a spring arrangement similarly located by which the movable roll is made to yield to a sudden pressure. Indeed, the *Nemelka* machines contain devices obviously adopted from earlier and less perfect forms. But as the *Nemelka* patents exhibit completely the state of the art at the time the *Gray* patents were taken out, nothing will be gained by reference to prior or other patents.

*Gray's* improvement consisted in the invention of the rod *G*, connecting it at either end with the bearing of one of the two rolls, and placing upon one end or the other of it the three forms of horizontal adjustment, leaving the vertical adjustment to be provided for by an eccentric located at the lower end of the swinging bearing *D*. The devices certainly appear to an advantage, as compared with those shown in the *Nemelka* patents, and were apparently the first in this country to supersede the ancient millstones, but, after all, they are only special devices for the more perfect and convenient accomplishment of the same, or practically the same, results. It is not a pioneer patent, and is not entitled to that liberality of construction which would have been accorded to it had *Gray* been the first to devise a scheme for these several adjustments. An examination of the specification and claims of this patent shows the essence of his invention to be the rod *G*, connecting the bearings of the rollers, with its several provisions for horizontal adjustment as stated in the fourth and fifth claims. These claims are practically for a combination of (1) a movable roller bearing, (2) the rod *G*, (3) an adjustable stop device to limit the inward movement of the

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bearing, (4) an outside spring, urging the bearing inward; (5) means for adjusting the spring, and (6) a stop and holding device at the opposite end of the rod from the spring.

In defendant's machine the same results are brought about, but in a manner which suggests the Nemelka as strongly as the Gray patent. As in the Nemelka patents, the vertical adjustment is accomplished by a set screw, (instead of the eccentric used by Gray,) located at the lower end of the swinging bearing, by the turning of which the bearing is raised or lowered. But as the vertical adjustment cuts no figure in the consideration of this case, it need not be further considered. Parallelism is also secured by horizontal set screws as in the Nemelka devices. There is no rod G connecting the two bearings in the defendant's machine, nor anything that can be said to be a mechanical equivalent for it, as a special device for securing the horizontal adjustments. In lieu of this rod, there is at each end of the adjustable roller an upright rod, encircled by a spiral spring. This spring is operated by a nut which presses upon a horizontal arm of the bearing through which the rod passes. The screwing down or tightening of this nut tends to separate the adjustable roll from its companion, while, if it be loosened, the resilience of the spring pressing upon the under side of the horizontal arm forces the roll back to its place. While this is an *inside* spring and not an "*outside*" one, its effect in urging the bearing *inward* is similar to that of the spring in Gray's patent. This spring is also capable of yielding to a sudden pressure by which the adjustable roll is forced back and separated from its companion, by the passage of any hard substance, and of resuming its original tension after such hard substance has passed between the rolls. There are also two nuts at the lower end of the spiral spring corresponding in position to the adjusting nut *l*, and jam nut *m*, of the Gray patent, although they apparently lack their function in limiting the action of the spring. The stop and spreading device is not connected at all with the rod, which is supposed to correspond with the rod G of the Gray patent, but is located at the bottom of the swinging bearing, and is operated by a lever applied to

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an eccentric shaft, as in the Nemelka patent. The resemblance between the two devices, upon which the charge of infringement must ultimately rest, is in the correspondence of the upright rod with its encircling spiral spring with the rod G of the Gray patent. While in one, and perhaps two particulars, it may be said to perform the same function, it certainly has not the stop and holding device of the Gray patent, it is not a horizontal rod, it is not located above the rollers, it does not connect the bearings of the two rollers together, it does not contain any stop and holding device, and, in so far as it accomplishes the same functions as the rod G, it accomplishes them in a manner suggested rather by the Lake than by the Gray patent. Upon the whole, we think the Circuit Court was correct in holding that defendant's machine was not an infringement of the Gray patent. Should this device be adjudged an infringement, we should not know where to draw the line, providing the alleged infringing device accomplished the four results.

If defendant is not held as an infringer of this patent, it cannot be held as an infringer of patent No. 238,677. The mechanism for simultaneously moving both ends of two rolls, which forms the combination of the second claim, and that for moving the two ends of one roll simultaneously, which is covered by the third claim, were found by the court below to have been anticipated in the Nemelka patent, and we see no reason for questioning the finding in that particular.

The decree of the court below in dismissing the bill is therefore

*Affirmed.*